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Engagement of CD28 modulates CXC chemokine receptor 4 surface expression in both and CD3-stimulated CD4+ T cells.  
J Immunol. 2000 Apr 15;164(8):4018-24.  
PMID: 10754293; UI: 20219234

2: [Riley JL, Levine BL, Craighead N, Francomano T, Kim D, Carroll RG, June CH.](#) [Relate](#)  
Naive and memory CD4 T cells differ in their susceptibilities to human immunodeficiency type 1 infection following CD28 costimulation: implications for transmission and pathogenesis.  
J Virol. 1998 Oct;72(10):8273-80.  
PMID: 9733871; UI: 98406235

3: [Carroll RG, Riley JL, Levine BL, Feng Y, Kaushal S, Ritchey DW, Bernstein W, Weislow OS, Brown CR, Berger EA, June CH, St Louis DC.](#) [Relate](#)  
Differential regulation of HIV-1 fusion cofactor expression by CD28 costimulation of T cells.  
Science. 1997 Apr 11;276(5310):273-6.  
PMID: 9092480; UI: 97248643

4: [Brice GT, Mayne AE, Villinger F, Ansari AA.](#) [Relate](#)  
A novel role for tumor necrosis factor-alpha in regulating susceptibility of activated CD4+ T cells from human and nonhuman primates for distinct coreceptor using lentiviruses.  
J Acquir Immune Defic Syndr. 2000 May 1;24(1):10-22.  
PMID: 10877490; UI: 20334001

5: [Riley JL, Schlienger K, Blair PJ, Carreno B, Craighead N, Kim D, Carroll RG, June CH.](#) [Relate](#)  
Modulation of susceptibility to HIV-1 infection by the cytotoxic T lymphocyte antigen costimulatory molecule.  
J Exp Med. 2000 Jun 5;191(11):1987-97.  
PMID: 10839813; UI: 20298904

6: [Juffermans NP, Verbon A, Olszyna DP, van Deventer SJ, Speelman P, van Der Poll T.](#) [Relate](#)  
Thalidomide suppresses Up-regulation of human immunodeficiency virus coreceptors (CD4 and CCR5) on CD4+ T cells in humans.  
J Infect Dis. 2000 May;181(5):1813-6.  
PMID: 10823791; UI: 20283760

7: [Creson JR, Lin AA, Li Q, Broad DF, Roberts MR, Anderson SJ.](#) [Relate](#)

The mode and duration of anti-CD28 costimulation determine resistance to infection by macrophage-tropic strains of human immunodeficiency virus type 1 in vitro.

J Virol. 1999 Nov;73(11):9337-47.

PMID: 10516042; UI: 99445841

8: Carroll RG, Riley JL, Levine BL, Blair PJ, St Louis DC, June CH.

Relate

The role of co-stimulation in regulation of chemokine receptor expression and HIV-1 in primary T lymphocytes.

Semin Immunol. 1998 Jun;10(3):195-202. Review.

PMID: 9653046; UI: 98317006

9: Moriuchi H, Moriuchi M, Fauci AS.

Relate

Cloning and analysis of the promoter region of CCR5, a coreceptor for HIV-1 entry.

J Immunol. 1997 Dec 1;159(11):5441-9.

PMID: 9548484; UI: 98208263

10: Garzino-Demo A, DeVico AL, Gallo RC.

Relate

Chemokine receptors and chemokines in HIV infection.

J Clin Immunol. 1998 Jul;18(4):243-55. Review.

PMID: 9710741; UI: 98376600

11: Landay AL, Patterson B, Andersson J.

Relate

Cytokine modulation of HIV-1 chemokine receptor expression.

Nat Med. 1999 Jun;5(6):592-3. No abstract available.

PMID: 10371480; UI: 99297890

12: Wang JM, Oppenheim JJ.

Relate

Interference with the signaling capacity of CC chemokine receptor 5 can compromise it as an HIV-1 entry coreceptor in primary T lymphocytes.

J Exp Med. 1999 Sep 6;190(5):591-5. Review. No abstract available.

PMID: 10477544; UI: 99406768

13: Riley JL, Carroll RG, Levine BL, Bernstein W, St Louis DC, Weislow OS, June CH.

Relate

Intrinsic resistance to T cell infection with HIV type 1 induced by CD28 costimulation.

J Immunol. 1997 Jun 1;158(11):5545-53.

PMID: 9164979; UI: 97307637

14: Carlesimo M, Pontesilli O, Varani AR, Bernardi ML, Mazzone AM, Rosso R, Guerra EC, Cassone A, Paganelli R, Aiuti F.

Relate

CD28 costimulation and T lymphocyte proliferative responses in HIV-1 infection.

Clin Exp Immunol. 1997 Sep;109(3):406-11.

PMID: 9328113; UI: 97466773

15: Levine BL, Mosca JD, Riley JL, Carroll RG, Vahey MT, Jagodzinski LL, Wagner KF, Mayers DL, Burke DS, Weislow OS, St Louis DC, June CH.

Relate

Antiviral effect and ex vivo CD4+ T cell proliferation in HIV-positive patients as a result of CD28 costimulation.

Science. 1996 Jun 28;272(5270):1939-43.

PMID: 8658167; UI: 96275689

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## GeneCard for CXCR4

HUGO gene nomenclature committee  
**CXCR4 (chemokine (C-X-C motif), receptor 4 (fusin))**

[\[Back to GeneCards Homepage\]](#)

### Synonyms (according to [GDB](#))

- NPY3R
- chemokine (C-X-C motif), receptor 4 (fusin)
- D2S201E
- HM89
- NPYR
- LESTR
- NPYY3R
- HSY3RR
- fusin
- NPYY3
- neuropeptide Y receptor Y3

### CXCR4 in other gene-based resources

[GDB ID: 230002](#) [LocusLink ID: 7852](#) [euGene ID: HUgn7852](#)

### Chromosomal location: (according to [OMIM](#) or [LocusLink](#), and/or [UDB](#))

*chromosome: 2* *OMIM cytogenetic band: 2q21*

*Unified DataBase coordinate (from pter): 158.8 ± 1.4 Mb*

### Proteins: (according to [SWISS-PROT](#), [MIPS](#), and [BLOCKS](#))

CCR4\_HUMAN: c-x-c chemokine receptor type 4 (cxc-r4) (cxcr-4) (sdf-1 receptor)(stromal cell-derived factor 1 receptor) (fusin) (leukocyte-derived seven transmembrane domain receptor) (lestr) (lcr1) (fb22) (npyrl)(hm89). --gene: *cxcr4*. [352 amino acids; 39 kd]

- function:** receptor for the c-x-c chemokine sdf-1. transduces a signal by increasing the intracellular calcium ions level. acts as a co-receptor with cd4 for syncytium-inducing strains (si) (t- cell-line-adapted) of hiv-1 virus. it promotes env-mediated fusion of the virus.
- subcellular location:** integral membrane protein.
- similarity:** belongs to family 1 of g-protein coupled receptors.
- caution:** was originally thought to be a receptor for neuropeptide y, type 3 (npy3-r).
- MIPS Pedant Viewer:** [67669](#) [67668](#) [67670](#) [67671](#)
- Blocks protein family:** [BL00237](#) G-protein coupled receptors proteins.

### Sequences (GenBank/EMBL/DDBJ accessions according to [Unigene](#) or [GenBank](#), RefSeq according to [LocusLink](#), assembly according to [MIPS](#) and/or [DOTS](#) and/or [UCSC](#))

**Unigene Cluster for CXCR4:** ( Build 126; Nov 14 2000 )  
chemokine (C-X-C motif), receptor 4 (fusin)  
[Hs.89414](#) [show with all ESTs]

**Unigene Representative Sequence:** [AF147204](#)

**REFSEQ mRNAs:** [NM\\_003467](#)

**MIPS assembly:**  
[H54913S2](#) [H54913S1](#) [H54913S3](#) [H54913S4](#)

**DOTS assembly:** [157119](#)

**UCSC draft assembly:** [AF147204](#)

**Additional Gene/cDNA sequence:**

<p><b>Similar genes in other organisms:</b> (according to <a href="#">MGD</a> Nov 13 2000 )</p>	<p><b>Mammalian homologues:</b></p> <table><thead><tr><th><i>gene</i></th><th><i>locus</i></th><th><i>description</i></th><th><i>Genbank accessions</i></th></tr></thead><tbody><tr><td>mouse <a href="#">Cmkar4</a></td><td>1 (67.40 cM)</td><td>chemokine (C-X-C) receptor 4</td><td>AB000803 D87747 US9760 U65580 X99581 X99582 Z80111 Z80112</td></tr></tbody></table>	<i>gene</i>	<i>locus</i>	<i>description</i>	<i>Genbank accessions</i>	mouse <a href="#">Cmkar4</a>	1 (67.40 cM)	chemokine (C-X-C) receptor 4	AB000803 D87747 US9760 U65580 X99581 X99582 Z80111 Z80112
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<p><b>Disorders &amp; Mutations</b> (in which this gene is involved, according to <a href="#">OMIM</a>, <a href="#">SWISS-PROT</a>, <a href="#">Genatlas</a>, <a href="#">HGMD</a>, <a href="#">TGDB</a>, and/or <a href="#">BCGD</a>)</p>	<p>--</p>								
<p><b>Medical News</b> (possibly related articles in <a href="#">Doctor's Guide</a>)</p>	<ul style="list-style-type: none"><li><a href="#">Small Molecule Blocks Cell-Surface Receptor Needed For HIV-1 Infection</a></li><li><a href="#">Scientists Find New Way To Help Blood Cells Fight HIV Infection</a></li><li><a href="#">Scientists Find Way To Short-Circuit Initial HIV Invasion</a></li><li><a href="#">STDs, Elevated Progesterone Raise HIV Infection Risk For Women</a></li><li><a href="#">Specifically Targeting HIV-Infected Cells: A New Gene-Therapy Approach</a></li><li><a href="#">Trojan Horse Virus Controls HIV Infection</a></li></ul>								
<p><b>Research Articles:</b> (in <a href="#">PubMed</a>)</p>	<p><a href="#">Search PubMed for CXCR4</a> to find abstracts of <b>research articles</b> containing this gene name</p>								
<p><b>Additional Sources of Information</b> on the web</p>	<table><thead><tr><th><i>name</i></th><th><i>description</i></th></tr></thead><tbody><tr><td><a href="#">Genatlas biochemistry entry for CXCR4</a>: fusin,chemokine (CXC) motif,receptor 4,preferentially expressed on the more immature CD34+ hematopoietic stem cells,G protein coupled receptor superfamily,required for entry of T cell line-tropic strains HIV-1 into CD4 cells,bovine locus coeruleus homolog</td><td>Links to <b>sequences</b>, linkage data, <b>maps</b>, and <b>papers</b></td></tr><tr><td><a href="#">Search RZPD for clones of CXCR4</a></td><td>Clone collection at the German Human Genome Project, Resource Center</td></tr><tr><td><a href="#">Search the web for CXCR4</a></td><td>search millions of <b>Web pages</b> with <b>Excite</b> to find articles, personal homepages, conferences, discussions, and other web sites related to <b>CXCR4!</b></td></tr></tbody></table>	<i>name</i>	<i>description</i>	<a href="#">Genatlas biochemistry entry for CXCR4</a> : fusin,chemokine (CXC) motif,receptor 4,preferentially expressed on the more immature CD34+ hematopoietic stem cells,G protein coupled receptor superfamily,required for entry of T cell line-tropic strains HIV-1 into CD4 cells,bovine locus coeruleus homolog	Links to <b>sequences</b> , linkage data, <b>maps</b> , and <b>papers</b>	<a href="#">Search RZPD for clones of CXCR4</a>	Clone collection at the German Human Genome Project, Resource Center	<a href="#">Search the web for CXCR4</a>	search millions of <b>Web pages</b> with <b>Excite</b> to find articles, personal homepages, conferences, discussions, and other web sites related to <b>CXCR4!</b>
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